



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

### Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

### About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>

THE  
SOLDIER'S POCKET GUIDE  
TO  
SHOOTING.

---

W. G. UNDERHILL.



600022678V



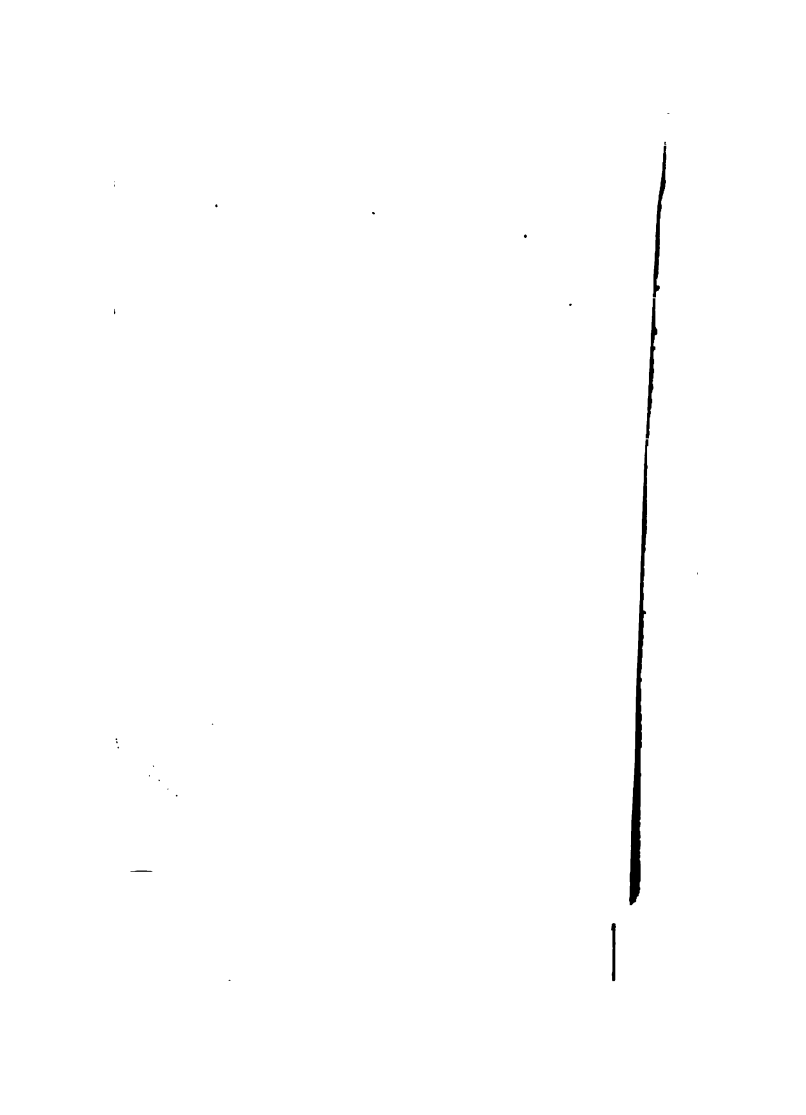




LIAM CLOWES & SONS, 13, CHARING C



1. **THEORY OF THE EARTH**



THE  
SOLDIER'S POCKET GUIDE  
TO  
SHOOTING.

BY  
W. G. UNDERHILL,  
*Sergt.-Instructor, 26th Cameronians.*



231. c. 235

LONDON:

WILLIAM CLOWES & SONS, 13, CHARING CROSS, S.W.

1878.

**LONDON :**  
**PRINTED BY WILLIAM CLOWES AND SONS,**  
**STAMFORD STREET AND CHARING CROSS.**




## PREFACE.

---

THE introduction of short service into the army has been the cause of wide reform in everything connected with the soldier, from the organization and equipment of an expedition, to the most minor detail in connection therewith.

The superiority of the Martini-Henry rifle as a military weapon is unquestionable; but the period allowed in which to manufacture a thoroughly efficient marksman has been so much curtailed, that it will be acknowledged that any attempt which would tend to hasten the attainment of efficiency in this respect, or, in fact, in any other branch of his military education, would be productive of good, and be a step in the right direction.

There is no branch of military education more deservedly popular amongst the rank-and-file than "musketry;" yet it is a fact that the only printed work on the subject in existence, applicable to the musketry training of the soldier, is the book of *Musketry Regulations for the Army*. This edition compiled more for the instruction and guidance



the musketry staff than for the perusal of the private soldier. The author, therefore, seeks to supply this want by the production of a small work, simple to understand, but sufficiently comprehensive, in which no use is made of any terms except those which can be easily understood, and in which is brought prominently to the notice of the soldier, in a plain, but expressive manner, all information which it is thought likely will meet the end in view. Diagrams, when necessary, are used, to illustrate what the context is intended to convey.

As an instance of the beneficial effects which may be expected from affording the soldier an opportunity of making himself better acquainted with matters appertaining to his own efficiency, by individual study, the author may here mention that in the year 1874 he compiled, in the form of a *brochure*, some "Hints, Facts, and Suggestions" on musketry, which, through the kindness of his commanding officer, were printed and circulated throughout his regiment. The book was eagerly and attentively perused by every man in the corps, which was that year not only the first in musketry efficiency throughout the whole army, but obtained a figure of merit unprecedented in former years.

The author's first attempt having been so gratefully and successfully appreciated by his comrades, he is now emboldened to embody his views in a more voluminous form, for circulation throughout the ranks of the army.




## INTRODUCTORY ADDRESS.

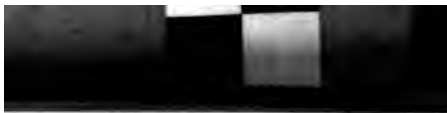
---

COMRADES,

In making an appeal to the *esprit de corps* of the soldiers of this army, I know there is little danger of such appeal not meeting with the most hearty response; and as the subject upon which I desire to address you, viz., your shooting, is one as intimately connected with your individual honour as with that of your respective corps and our glorious army at large, I feel that any apology would be out of place.

It may inspire you with confidence in my competency to advise you to know that I have been for many years uninterruptedly employed in the musketry instruction of the soldier; that a very great deal of my spare time during that period has been devoted to additional study of musketry, both theoretically and practically, and that I have personally tested on the practice range the accuracy of every statement which will be found herein. I have also been in the habit of witnessing the shooting, and carefully noting the effects of the different "dodges" of some of the best rifle shots in:





world ; and in order that I might have an opportunity of extending my information and comparing systems, I have even taken an active part in the instruction of the sepoy.

I mention all these circumstances at starting, in order that you may have full belief in my capability to benefit you, by a long experience contracted amongst yourselves, and therefore peculiarly applicable to yourselves ; and that you may understand that I have something more than a mere superficial knowledge of my subject.

Shooting is an art, excellence in which may be attained by any man having the use of his eyes and limbs, combined with a fair degree of intelligence, if he be only anxious enough to desire it ; and it is surely only reasonable to suppose that these conditions will include the whole of an army so carefully selected as our own. My remarks may therefore be considered as applying to every individual in the ranks who carries a rifle.

A desire to become a good shot is evinced by a man's evident wish and endeavour to understand the *theory*, or *reason why*, of every little thing connected with his preliminary instruction and ball practice ; by his attention to those small matters which at first sight appear so really trivial as to be quite beneath notice, but which as applied to rifle shooting are of the greatest importance ; also by his care, when engaged at target practice, to make mental note of all surrounding circumstances and influences which *can possibly affect his shooting*.

I must, therefore, beg all who are candidates for musketry honours to accompany me carefully through the succeeding pages, bearing in mind that such apparent trifles as the position of a finger, the drawing of a breath, the dent on the point of a bullet, all have their effect on shooting; and that attention to minutiae is the correct motto for all aspiring marksmen.

Thorough efficiency in one portion of any undertaking seldom compensates for shortcomings in another. For example, what could be done with the most splendid army ever organized, when on active service, should the means of transport fail? Again, what would you call an excellently equipped and active body of men without drill and discipline? Simply a mob. And as it is with great things, so it is with small. As with armies, so with private soldiers. A man may be very well up in all other branches of his drill; he may be an otherwise good and a clean soldier, and look very well at a review, but he would be simply useless when called on to fight if he could not use his rifle with effect; indeed, he would be worse than useless, as he would be consuming the provisions required for better men.

Now, as regards the art of shooting itself, aptitude in one of the branches of musketry instruction will not counteract any want of knowledge respecting another; and no man can be a thoroughly good shot who is not proficient in each and all of the several branches into which the instruction of musketry is divided; *e.g.* a soldier who aims splendidly, and wi

can place himself in the best possible position shooting, would be utterly useless on the range, and also in front of the enemy, in unfavourable weather, if he did not understand the necessary allowance to be made for wind; just as another man, possessed of the most unfailing judgment on other points, would be certain to make inferior practice if he did not know how to get into a good and firm, yet comfortable, position.

I trust that I have now said enough to show that, in order to have a thoroughly efficient army, we must have one composed of good marksmen; and also that to be worth the pay he draws, the soldier must be able to shoot well.

I am aware that many soldiers entertain the mistaken belief that certain parts of their annual musketry course are useless, and are more a matter of form than a necessity; and to these I would only say, that had each separate branch of the preliminary instruction not been most carefully considered by those best qualified to judge of its expediency, and decided to be both necessary and useful, it would never have formed a part of musketry instruction.

Before concluding my introduction, I will embrace the opportunity of reminding you that, amongst the many instances in which each individual soldier has the power of adding to the honours in possession of his corps, whether at home or on active service in the field, the possibility of doing so with his rifle is conspicuous even in time of peace, and when stationed at home.

The colours of one regiment are covered with honours nobly won on the battle-field; another has pride in its ancient origin. These are gained by the fortune of war, or are hereditary; but any one of her Majesty's regiments may be raised at any time, by the individual exertion and emulation of its own members, to that honourable and envied position of being first on the roll for musketry efficiency.

In the present critical state of affairs in the East, how important it is that every one of her Majesty's soldiers should strain every nerve, so that each man may be found "ready" when called upon to uphold the honour of the arms he carries! for the instances are too numerous to detail, when the fate of many, ay, even that of an army, have depended on the courage, skill, intelligence, and activity of one private soldier.

Then let us one and all strive to attain that proficiency in the use of our arms, without which we cannot be in a position to do our duty when called on to fight for our Queen and country.

Your faithful comradé,

W. G. UNDERHILL.



# CONTENTS.



CHAPTER	PAGE
I. CONSTRUCTION OF THE RIFLE ... ..	1
II. SIMPLE THEORY ... ..	8
III. DRILL ... ..	14
IV. THE AIM ... ..	23
V. SIGHTING ... ..	31
VI. DEFLECTING-SIGHTS ... ..	39
VII. POSITION ... ..	44
VIII. BALL PRACTICE ... ..	49
IX. SKIRMISHING ... ..	56
X. MATCH FIRING ... ..	59
CONCLUDING REMARKS ... ..	63





# THE SOLDIER'S GUIDE TO SHOOTING.

---


## CHAPTER I.

### *CONSTRUCTION OF THE RIFLE.*

It is desirable that every soldier should know something of the construction of his arms, not only that he may be familiar with the names of those parts which are referred to in his instruction, but that he may learn what parts are most liable to damage, and that his rifle is a delicate instrument, which requires the greatest care in cleaning, and most careful preservation, to keep it in serviceable order. He may also be taught that in certain cases of accidental injury, within his power to repair, he may himself be able to render his weapon again fit for service. And he should further learn how the interior construction of the barrel affects the flight of the bullet, and increases accuracy of fire.

*In the construction of fire-arms, the three mai*

B



points to be taken into consideration are durability, accuracy of fire, and handiness; and to form a good military weapon, all these qualities must be combined.

The barrel of the Martini-Henry rifle is manufactured of the best unhardened shear-steel, and is 2 feet 9 inches in length, is a quarter of an inch thick at the breech end, and gradually tapers towards the muzzle, where it is only an eighth of an inch in thickness. The extreme thickness of the breech end is necessary on account of considerable strength being required to withstand the force of the explosion which takes place there. The same thickness, however, is unnecessary throughout, and also undesirable, as it would render the weapon much heavier, more unhandy, and badly balanced; it is, therefore, only so thick at the muzzle as to be of sufficient strength to withstand the very much reduced force of the explosion, and the pressure of the bullet in its outward passage, and to support the bayonet when fixed.

The material from which the barrel is manufactured renders it particularly liable to damage from careless usage, being easily bent by violence, and as any dent on its surface, caused by its falling against any hard or sharp object, or by a heavy blow would take effect through to the interior or bore such accidents are fatal to good shooting.

The prominent position of the back and fore sights renders them specially liable to damage; and as accuracy in shooting depends so much on the *sights being protected from injury*—the foresight

preserving its sharpness, uprightness,<sup>†</sup> and freedom from any abrasion or dent; the flap of the backsight retaining its exact vertical position when raised; the sliding bar fitting the uprights sufficiently well to be in no danger of falling down of its own accord, and the notches and lines being well defined and free from dirt—the greatest care must be taken to prevent these parts of the rifle from being knocked about against arm-racks, in piling, etc., and the sight protector should always be on the rifle when the latter is not in use.\*

The inside of the barrel or “bore” being grooved or rifled, and this formation being necessary to ensure accuracy of fire, it will be understood that any interior damage to the barrel must be detrimental to shooting. The grooving, however, is so easily spoiled by carelessness in cleaning, that the soldier cannot be cautioned too much in this respect.

In sponging out, the sight protector † should invariably be on the rifle, so as to prevent the cleaning-rod coming in contact with the interior of the muzzle, and the rag used should be most carefully freed from grit, and wound evenly round the jag, so

\* I would have only *fixed* elevations, say, for 200, 400, 600 yards, and so on. Then, for the intermediate distances, level at the top or bottom of the target, or, when in action, the man's head or feet.

I doubt if, in the hurry of action, there will be much arranging of sights.

† The latest pattern of sight protector is furnished with a hole at the top, through which to pass the cleaning-rod when sponging out.

as to cover completely both sides and point. If this be done, no injury can happen to either the grooves of bore, face of breech-block, or striker.

On first looking through the barrel of his rifle, the recruit cannot fail to be struck by its peculiar appearance, and the first thought of an inquiring mind would be, "Why is it made so?" He will see that the bore is grooved, and that these grooves, which are seven in number, are cut in a spiral or screw-like manner, winding round inside the barrel from breech to muzzle. The reasons for this construction I will now endeavour to explain.

The advantages gained by causing the bullet to rotate or spin, point foremost, during its flight through the air, are so great, that many plans have been tried to effect this object, but that of rifling the bore is undoubtedly the best. There are many varieties of grooving, the one now under our consideration being called the "Henry" system.

When the rifle is fired, the force of the explosion is so great, and acts upon the bullet with such violence, that it drives it forwards before the air which is in front of it in the barrel has time to evacuate it; the bullet, therefore, becomes tightly jammed between the gunpowder gas behind and the confined air in front, so that the soft lead bullet is squeezed into the spiral grooves, moves round, and follows the same twisting course, as far as the muzzle, and afterwards continues the same rotatory motion during its flight through the air.

The interior construction of the barrel, as above

explained, is also calculated to render windage unnecessary, thus bringing to a maximum the explosive force of the charge, and reducing to a minimum the quantity of gunpowder required.

In order the more fully to understand the latter consideration, the reader must know that gunpowder is comparatively slow of combustion, and if the bullet were to fit the barrel at all loosely during its passage through it, it would pass out of the muzzle too quickly, and probably before all the powder had been burnt, thus causing a great waste of force; moreover, if the slightest space were allowed to remain between the sides of the bullet and the bore some of the gas from the exploded charge would escape, thus causing still greater waste.

The soldier has now learnt from whence the bullet derives that spinning motion which keeps its point foremost during its flight; but should he wish to have ocular demonstration that the desired object has been attained, he has only to examine any spent bullet not too much damaged, or one which has been fired into a bale of wool or any such soft, yielding substance, and he will see that it is distinctly marked diagonally by the grooves of the barrel, which could not be the case had it passed without twisting through the bore. If he will then examine a deal board through which a shot has been fired, or a whitened target at which recent practice has taken place, he will find ample proof that the rifle-bullet travels through the air and strikes an object point foremost.

Martini-Henry rifles, of two different lengths, are issued to regiments—a certain percentage being what are termed “Short Butts.” These are half an inch shorter than the others, measured from butt-plate to trigger, and are intended for issue to the smallest men, or those with disproportionately short arms.

It might so happen that, when on service and at a distance from the armourer's shop, the rifle might become unfit for use on account of an accumulation of rust or dirt in the action. In such cases the latter could not well be placed in serviceable condition without removing the block; and as intelligent soldiers are permitted to do this when necessary, the instructions for removing and replacing the block are hereto appended.

*To remove the Block.*

1. Close the action.
2. Press out block axis-pin.
3. Depress the lever, and hold down front of block with left thumb, close the lever, and the block will spring out.

*To replace the Block.*

Place the block in body, with the front end lowest; hold the lever with the right hand, the thumb pressing the indicator forward, the trigger being pressed back by the forefinger; press hard on *the knuckle of block* with the heel of the left hand to *force it into its seat*; at the same time depress and

work the lever to get the tumbler into the slot in the striker; replace block axis-pin.

After removing the block, no other part of the action is on any account to be tampered with, but the dust, etc., removed by means of a feather, the parts oiled, and the block immediately replaced.

## CHAPTER II.

*SIMPLE THEORY.*

THE soldier having been told in the preceding chapter that the peculiar construction of the bore so acts upon the bullet during its passage through it, as to impart to it a rotatory motion, and regulate its flight through the air, he will naturally be desirous of learning something regarding its course after leaving the muzzle. He will therefore now be taught the theory of its flight, and how it is acted upon by certain natural influences, which increase the difficulty of accurate shooting, and whose action has to be counteracted by invention in manufacture and skill in marksmanship.

There is a certain law of nature called "*gravity*," and this law determines that all substances heavier than the air shall be attracted or drawn towards the centre of the earth. It is a fact, of which every one is aware, that any unsupported article will fall and keep falling until it meets with something to rest upon; and it is also the case with bodies propelled through the air, such as a stone or a cricket-ball. This law of gravity applies equally to the cannon-ball, the shell, and the rifle-bullet, acting upon all,

whether dropped from the hand or fired from a gun, in proportion to the time that each is exposed to its influence—so that the greater the distance between the firer and the target the longer time is the bullet unsupported in the air, and the more time has gravity to act upon it; therefore, as the distance increases, so does the fall of the bullet, which, having to be counteracted, is the cause of the greater difficulty experienced in making accurate shooting at the long distances than at the short ones.

Thus we learn that gravity has a very marked effect on the flight of the bullet, by drawing it gradually downwards below the line of fire from the moment it leaves the muzzle, causing it to fall a greater number of feet during the second hundred yards of its flight than during the first hundred, and so on.

But there is yet another influence at work on the bullet, and which materially affects its flight from the moment of firing, namely, "*the resistance of the air.*"

That the air, even in the calmest weather, offers a certain amount of resistance to any object passing through it, is easily proved by a person pushing an open umbrella in front of him, when the pressure will be distinctly felt, and the faster the umbrella is pushed the greater will be the resistance; or any one putting his head out of the window of an express train will have an opportunity of testifying to himself still more plainly the great resistance the atmosphere offers to any object passing through it. This

opposing force is felt by small objects as well as great ones, and it must be remembered that the *ri* bullet, although a very small object, rushes onwar against the air with a velocity of upwards of 1000 feet per second, of course meeting with a corresponding amount of resistance.

We now see that, in addition to the force of the explosion of the charge, the bullet has two influences acting upon it in two different ways from the moment it is fired.

Let us learn the result.

These two forces, viz., the force of gravity and the resistance of the air, lying in wait, as it were, for the bullet immediately it appears clear of the muzzle, the latter at once beginning to oppose it, and retard its progress, so that the former may get a firm grip of it, gradually dragging it down until it is stopped by the object it strikes, or the ground; the bullet thus rushes onwards and downwards, describing a curve which is called "*the trajectory*," by which term the true course of the bullet will hereafter be understood.

For a short distance after leaving the muzzle, owing to the great speed of the bullet's flight, and gravity having had very little time to act, the trajectory deviates very little from the line of fire, the bullet falling only ten inches in the first hundred yards; in the second hundred yards the bullet falls a much greater distance, on account of its gradually decreasing speed allowing gravity more time to *draw it downwards*; and so on for every succeeding

hundred yards, the fall and curve of the trajectory increasing more and more. And in this fact lies all the difficulty of accurate long-range shooting.

A reference to Plate I. will give the reader a good idea of the curve of the trajectory of the Martini-Henry rifle for all distances from 200 to 800 yards.

If the true course of the bullet, after leaving the rifle, were a straight line, and no such things should exist as resistance of air and gravity, it would be just as easy to hit a small object at 1000 yards' distance as at 100, provided the firer's eyesight were good enough, because it would then only be necessary to direct the axis of the barrel straight on the mark (for any distance) in order to hit it.

The difficulty caused by the curved nature of the trajectory is exemplified in the diagram, where it will be seen that a very slight error in sighting, judging the distance, or unsteadiness in firing, will cause the firer to miss the target altogether at a long range.

Take, for instance, a man adjusting his sight, and firing at a target which he believes to be 800 yards off; owing to an error in judging distance, however, he has sighted his rifle incorrectly, the mark being only 775 yards distant, or at the place in the plate where the infantry soldier stands (I). He fires, and misses the target, his bullet passing over it. Now, suppose the real distance to be 820 yards, or (F) he, still believing it to be 800, fires again, and this time his bullet strikes the ground

just before reaching the mark, thus showing that when firing at 800 yards' distance from a mark, an error in oversighting of 20 yards, or of 25 yards in undersighting, would cause the firer to miss an object six feet in height. Now let us compare the result of a couple of shots fired at 500 yards with what we have just seen. Let us imagine the firer makes the same error as regards his sighting as he did at the longer distance, the target being really only 475 yards off (N) for the first shot, and 520 yards (O) off for the second. He does not now miss the target altogether, as he did at the 800 yards' range; and had the object fired at been a man, the first shot would have hit him about the neck, and the second in the knee.

It has already been said that when the axis of centre of the barrel and line of fire are directed straight upon an object, the bullet must fall below it; it is therefore plain that in order to hit the mark, the axis must be directed above it, at every distance, as much as the bullet has been found to fall below it when firing at that distance. But in doing this, and endeavouring to take aim along the upper surface of the barrel at some point above the mark to be hit, the firer would altogether lose sight of the latter, on account of the muzzle of the rifle being brought up between his eye and the object, and it is needless to point out the difficulty of hitting a mark that could not be seen.

*In order to do away with this difficulty, sights back or elevating, and foresight) have been adopted*

and attached to the top of the barrel, by the use of which the firer is enabled to take a correct aim straight at the centre of the mark, and at the same time to impart to the axis of his barrel just the requisite degree of elevation. *Vide* illustration of shot fired at 500 yards, at beginning of book.

## CHAPTER III.

*DRILL.*

THE preliminary musketry drills bear the same relation to actual ball-practice as every other branch of drill does to the soldier's general efficiency, and without a sufficiency of elementary musketry exercise the soldier could no more become an efficient marksman than could an undrilled recruit be fit to take his place in the ranks.

As the term "*marksman*" will very frequently appear in these pages, it may be well that the reader should understand that the word is herein meant to apply only to that skilful soldier, who is always able to make fair average shooting at an object within range, irrespective of weather or distance, who is thoroughly at home with his rifle in any position, and is so proficient in judging distance as would make him independent of distance-posts and range-finders, and has such a knowledge of theory as would enable him to make a good account of his enemy, or, at all events, to scare him considerably, even were he on the move in any direction.

It is impossible to over estimate the beneficial

effects on shooting obtained by an ample quantity of carefully performed musketry drills, but it should be borne in mind, alike by squad instructors and men, that quantity without quality is useless—in fact, does more harm than good, and that a moderate amount of drill well performed, and in which the instructors and instructed vie with each other in endeavouring to produce efficiency, is infinitely more useful than an unlimited quantity of so-called drill, but which is, in fact, only a sham, and in which pains are not taken by squad instructors to inculcate thoroughly the correct principles, to rectify errors, and to explain minutely the probable bad effects arising from faulty positions, etc., and in which individuals under instruction do not devote their whole energies to the object in hand.

Many men are of opinion that there is but little benefit to be derived from the preliminary musketry drills, after the routine has been once gone through by the soldier; but it should be remembered that the effects of the instruction communicated to the recruit are liable to pass away unless kept up and repeated at least annually, and that without frequent drill the limited quantity of practice ammunition allowed would not be sufficient to enable the soldier to retain his efficiency with the rifle.

Any exercise which tends to improve the health, develope the muscle, and increase activity, cannot fail to improve the soldier's skill as a marksman. The nature of the preliminary musketry drills are eminently calculated to do all this, besides carrying

out the more immediate objects for which they are intended, namely :

Habituating the soldier to the best positions for delivering an effective fire.

Teaching him the principles of aiming, and the use of the sights.

Making him familiar with his rifle, pull-off, weight, etc.

Accustoming him to withstand, without flinch or movement of any kind, the explosion of the charge.

Teaching him to estimate distances correctly.

Giving him a fair knowledge of the theory of the motion of the bullet, effects of wind, etc.

"*Position drill*" is specially intended to teach the soldier the habit of placing himself in the most favourable positions (compatible with military considerations) for delivering his fire with good effect at short and long distances ; to strengthen the left or supporting arm so as to improve the shooting in the standing position ; to give him perfect command over his rifle, and accustom him to manipulate it freely ; and to establish that connection between hand and eye which *must* exist before good shooting can possibly result.

The soldier who wishes to excel is earnestly recommended to give his whole attention to the matter in hand, from the commencement until the conclusion of each drill, carefully noting the smallest detail communicated in his instruction, and bearing in mind that there is good and sufficient reason for performing the minutæ of the drill *exactly* as

directed. He should also remember that a bad habit in drill is the same as in everything else—once engendered very difficult to eradicate.

This branch of musketry instruction is divided into three parts, called “practices,” each of which has its own particular object.

The *first practice*\* being specially intended to develop the muscles of the left arm, its object cannot be considered as having been carried out until that arm has become sufficiently strong and muscular to enable the soldier to keep his rifle at the “present,” without the least unsteadiness or tremor, a time long enough to ensure a certain and effective aim.

The number of times of coming to the “present” without ceasing, in this practice, ought to be gradually increased during the days of drill, in proportion to the number of drills executed and the condition of the men, until every man in the squad is able to raise his rifle with fixed bayonet horizontally to the shoulder, without moving any part of his body except his arms, from thirty to forty times without ceasing. When he can do this properly he may be considered as in good condition, as far as muscle is concerned, to hold his rifle firmly

\* As a crack shot with a pistol can, by fixing his eye on his adversary, hit him in any part, firing from the hip; so can one well practised in position drill, by looking steadily at the mark, point his rifle directly at it without looking through the sights. N.B.—I have always thought it would be a good thing to give prizes for firing with ball from the “ready” position.

and steadily at the "present" when firing in the standing position.

Should the soldier not be thoroughly satisfied with his performance of this drill, and consider there is still room for improvement, he will reap benefit by a little barrack-room practice whenever he has a few minutes to spare.

I have often observed two or more men in their quarters emulating one another in this way, with as much apparent pleasure, and infinitely more good to themselves as soldiers, than in trying to out-jump each other, or tire one another down at double shuffle.

The order in which the motions of the "present" are to be performed, combined with the method of aiming from the shoulder, are taught in the *second practice*, the soldier being herein habituated in the most expeditious manner of bringing his rifle instantaneously into the correct firing position; raising it to the shoulder, lowering the head, closing the left eye, fixing the right eye on the mark, and placing the forefinger round the trigger simultaneously, thus leaving nothing undone, except to complete the aim and to fire; and preventing any necessity for the slightest subsequent movement at so important a moment, and permitting him to concentrate his undivided attention upon his aim and the object he wishes to hit.

The aiming, or second motion of the "present," combined with the firing of the rifle, requires the utmost coolness and steadiness of nerve to produce

good results, and it must here be borne in mind that all musketry training is intended to bear on that second of time at which the final pressure is placed on the trigger, so as to ensure as far as possible absolute inertia of body, hand, and eye, it being at that instant that the bullet receives its initial direction. The greatest amount of previous steadiness is useless if not preserved until the bullet has left the muzzle, and the slightest jerk or flinch at the moment of firing is fatal to good shooting, and irreparable as far as that shot is concerned.

In this practice, after the word "Two" is given, the time in which the motion is to be performed is left entirely to the discretion of each individual composing the squad, the ability to aim quickly not being so great in the case of some men as in others; a great tendency, however, exists to hurry this motion, and to snap before a good aim has been completed, by following the lead of the man who may have snapped first. The soldier is cautioned against this tendency, and strongly recommended to guard against carelessness or hurry in the performance of a part of his drill on which efficiency so much depends, being guided as to time by no one, but taking just as long or as short a period over his aim as he finds necessary to enable him to deliver a sure and steady shot. If at any time he cannot succeed in obtaining a satisfactory aim, he should not snap at random, but rather return to the "ready" position without having fired.

After each snap, no movement whatever should

be made for two or three seconds, the cheek should remain on the butt, left eye remaining closed, right eye still intent on the aim, finger remaining pressed hard on the trigger, and the breathing restrained; by this means the soldier will be enabled to discover any defect in his style of aiming, or manner of pressing the trigger, and be able the more readily to rectify any fault; it will also engender a good habit when firing ball.

The instructions here given for the performance of the second practice apply equally to the third, which is simply a repetition of the second, with the exception that the men of a squad are allowed to judge their own time in performing all the motions of the "present," after the command "Commence" has been given.

The *third practice* is carried out in any of the positions suitable for firing, and when well performed is only second in usefulness to actual ball practice.

During this drill, the soldier—when he finds he is competent to take a steady and correct aim, time after time, at the centre of the mark—should occasionally vary the spot on which he aligns his sights, by aiming sometimes on the left edge, and sometimes on the right edge, of bull's-eye, also a few inches to either side of it, always taking care, however, that the point aimed at is in the same horizontal alignment as the centre of the bull's-eye; he will, by adopting this plan, render himself more fit to make good firing in unfavourable weather, by having

practised aiming as would be required when ball firing on a windy day.

Too much cannot be said in favour of barrack-room snapping. An example in this respect should be set by non-commissioned officers, and the men encouraged to engage in it at spare times; and small paper targets should be placed in every barrack-room for this purpose, according to the dimensions and directions shown in Appendix.

The soldier should always be in possession of *his own* rifle, whether at drill or practice; as a rule, he will be able to acquit himself much better with a weapon to which he has become accustomed by constant use, than with one which is strange to him, and moreover, by constant manipulation of the same rifle, he becomes thoroughly acquainted with its pull-off, length of butt, sighting, etc.; therefore, the more seldom a change of arms is made the better.

During the preliminary drills the soldier is instructed in the correct principles of aiming, and his progress is tested by making him aim with the assistance of a rest, at an object placed at different distances. I have, however, entered fully into everything connected with "The Aim" elsewhere, and I purpose now simply to impress upon all, how very much is to be gained by a system of mutual instruction during aiming drill, and how much the squad instructors may be assisted in their endeavours by a little good feeling and earnestness *on the part of the men*, and by their pointing out *in good spirit* one another's defects, the more profi

assisting and advising their more unskilful comrades. Much advantage is to be gained from this mode of procedure, on account of soldiers being so intimately acquainted with one another's failings and weaknesses, and it is often to be found that a man will listen to, understand, and believe a comrade in the ranks, when he would treat with indifference the expostulations of an instructor.

The whole of the time employed at aiming drill should be utilized by the men in one way or another, either by performing the "first" or "third" practice independently, questioning and assisting each other in matters appertaining to musketry drill and practice, or in attentively listening to the remarks and explanations of the instructors, always making inquiry when the meaning of the latter does not appear plain.

The other branches of the preliminary drill, viz., "Theory," "Judging Distance," and "Cleaning Arms," are not treated of in this chapter, being fully entered into in another part of the book.

## CHAPTER IV.

### *THE AIM.*

EFFICIENCY as a marksman depends entirely upon the condition of the eye, and consequent ability to aim correctly. Difficulty in aiming results more frequently from imperfection in the visual organs than from ignorance of the principles of aiming; therefore the greatest attention should always be paid by the soldier to the state of his eyesight, and in cases where weakness of vision is apparent, immediate steps should be taken to remedy it.

A great drawback to the facility of taking a perfect aim is that caused by having to concentrate the sight on three separate objects, placed at different distances, as are the backsight, the foresight, and the point aimed at. To take a correct aim, these three points must be aligned with the greatest exactitude, in doing which the eye must be fixed on the most distant point of the three, thus rendering the view of all intermediate objects very far from clear. This hazy appearance applies specially to the backsight, it being so near to the eye, and furthest away from the point on which the eye is actually fixed. The difficulty in aiming is generally four

increase with age, as the older a man gets so his powers of vision usually decrease. Still, with the best eyesight in the world, a certain indistinctness will always be observable in the appearance of the backsight when aiming, which no improvement in the pattern can remedy. When the sights and mark altogether appear more than usually hazy, it is either owing to bad health, irregular habits, or advancing age.

When, on the latter account or any other, the soldier finds his eyesight beginning to fail, he should make it a rule to take a fuller aim, which means that he should allow himself a better or fuller view of the foresight, by raising it as much above the notch of backsight as will make it appear larger, and therefore plainer, to his weakened power of vision. All men with weak eyesight naturally experience greater difficulty in seeing a very small object than one of larger size; and such an exceedingly minute point as the extreme tip of the foresight, as seen over the notch or bar of backsight, when using only one eye, is, under favourable circumstances, often hard to distinguish by the clearest-sighted; therefore the same remedy must be applied that is resorted to by persons who cannot read small print, viz., to use spectacles, or to substitute the larger article for the smaller, by raising the foresight as already described.

It must be borne in mind by men who find this course necessary, that the raising of the foresight will give increased elevation, and probably cause the bullet to strike too high, unless counteracted

in some way. This is done—first, by aiming at the lower edge of the bull's-eye, if at target practice, or by making some such similar allowance when firing in the field; and, secondly, if this allowance is not found sufficient, by slightly lowering the sliding bar.

I have entered into the subject of weak eyesight rather fully, as I have seen so many good marksmen fail on that account, but they have wonderfully improved on trying the system as advised above.

Having discovered during his drill and practice the smallest portion of the foresight that he can see distinctly whilst aiming correctly, the soldier should invariably use the same; not at one time making use of the whole of the foresight, and at another of the tip only—such a practice does incalculable harm, making a man who would otherwise become a good shot a thoroughly bad one.

To obtain a true aim, the principles, as taught in the Musketry Regulations, must be carried out with the greatest nicety, the very tip of foresight being aligned most carefully with the exact centre of the notch of backsight or top of line on sliding bar, both points correctly covering the centre of the mark aimed at.

The soldier will at once recognize the necessity for such extreme care when he learns that the deviation of one-fiftieth of an inch—or a little more than the thickness of the finger-nail—of the tip of the foresight from the correct alignment when firing,

say at 600 yards, will cause his bullet to strike about 18 inches to one side of the mark.

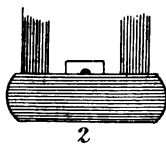
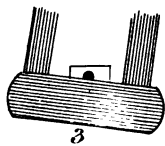
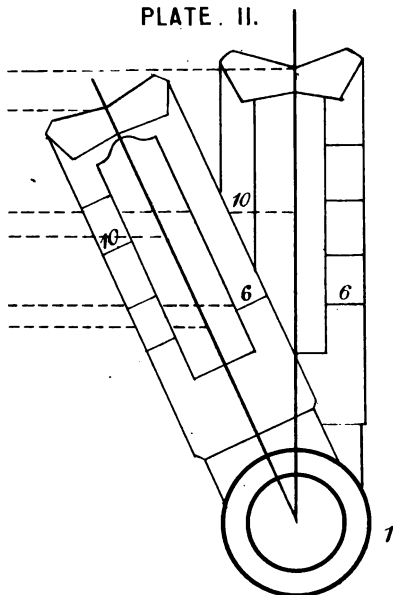
The young soldier is very prone, when aiming, to allow himself too full a view of the foresight, in other words, to raise his eye too much above the notch or bar of the backsight. The cheek of the firer should always be pressed down so close to the butt as to allow only the smallest visible part of the foresight to appear above the bar. The more minute the part of the foresight that can be seen (so long as perfectly distinct), the greater is the likelihood of the aim being a true one and the shooting good.

The soldier should always, except in one or two exceptional cases, referred to elsewhere, aim at or in the same horizontal line as the centre of the bull's-eye or mark to be hit. If he finds, during practice, that more or less elevation is required, he should obtain it by means of the sliding bar of backsight (*vide* remarks on this subject, under the head of "Sighting"); but should never aim, at one time under the bull's-eye, at another over it, and so on, or bad, irregular shooting will infallibly be the result.

A false aim may be caused, and consequent deviation imparted to the line of fire, in several ways. Error in this respect may be attributable to a faulty rifle, viz., where the notch of backsight is badly cut, lines marked on bar not being accurately placed, foresight damaged, or barrel bent. A bad aim, however, is usually owing to the firer's not being sufficiently impressed with the great exactitude



PLATE . II.



required in the alignment of the sights, or to defective eyesight. The thorough uprightness of the sights is a necessity which cannot be too strongly impressed on the soldier. If they are permitted to lean to one side when firing, as in Plate II., the axis of barrel and line of fire are directed to that side instead of being in the same vertical plane as the line of sight, the bullet going to the right when the sights lean over in that direction, and *vice versa*. Elevation is also lost, as the backsight when leaning to one side is not so high as when perpendicular (*vide* Fig. 1, Plate II.). When at the "present," the centre of the backsight should be so exactly perpendicular to the centre of the barrel as not to allow of the slightest deviation. More faulty shooting arises from carelessness in this particular than is generally believed. The liability to fire with inclined sights is incurred on account of various causes, some of which are as follows, viz., placing the cheek sideways on the butt in taking aim, instead of dropping the head straight to the front; gripping the stock badly with the left hand, or twisting the left elbow to the right, instead of bringing it straight under the rifle, which latter is an invariable cause of turning the rifle very much over to the left; allowing the thumb of the right hand to appear too near the line of sight when firing at short distances, and when the elevation of the sliding bar is not sufficiently high to enable the firer to see over the thumb, will induce a propensity to turn the rifle a little over to the left, in order to procure a freer

aim. I have also, in a few instances, found the barrel and body of the rifle not properly screwed together. When discovered, this latter defect can be easily rectified by the armourer.

An infallible guide, by which the uprightness or otherwise of the backsight can be at once ascertained during target practice, is as follows: Whilst taking aim, align the horizontal top of sliding bar with the top edge of the target; if the sights be perfectly upright, the appearance will be as in Fig. 2; if inclined, as in Fig. 3, Plate II.

In closing the left eye, care must be taken not to shut it too rigidly; both eyes are connected by one nerve, and by claspings the eyelid too tightly over one eyeball, a tremor is imparted to the other, which is calculated to disturb that fixed gaze so essential to ensure a correct and sure aim.

It may be useful here to mention a very simple plan of clearing any temporary derangement of the eye just before firing. I have seen it practised frequently, and, am assured, with good effect. Close the fingers of either hand, so as to form a hollow cone, both ends being open, the forefinger and thumb forming the wider aperture, the remaining fingers being closed so as to admit no light, except between the bend of the little finger, where a ray of light, no larger than a pin's head, is to be admitted. Place the larger opening close to the right eye, the left being closed, and look for a few seconds at the sky (not the sun); repeat this two or three times, and the haziness of sight will disappear.

If the soldier will try to bear in mind the following simple rules, and practically apply them every time he brings his rifle to the "present," he cannot fail to benefit thereby.

Never to bring the rifle to the "present" without having first selected some small object to aim at.

Before commencing the aim—but as soon as the head is lowered, and left eye closed—correct any inclination of the sights.

After coming to the "present," let nothing distract the attention from the aim, but be on the look-out for sudden changes or gusts of wind.

Never aim higher or lower than the centre of the mark (in the case of men with defective vision, a little lower), using the foresight as directed at page 24.

Should the sun appear very bright from one side, and the sights become lighted up (the sights of a careful marksman are never bright), make a little allowance to that side from which the sun shines, *i.e.* if the light is from the right, aim a few inches to the right, and *vice versâ*.

Restrain the breathing as much as possible during the aim, especially when in the lying-down position, as, when the firer is flat on the ground, the inflation of the lungs heaves the whole body.

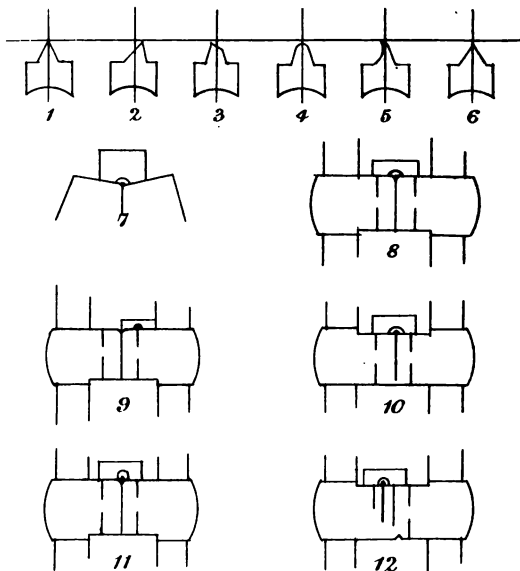
Wait to ascertain the effect of the shot, or to hear it strike, before removing the rifle from the shoulder, eye from mark, or finger from trigger.

Having now done my best to make plain the difference between a good aim and a bad attempt

and endeavoured to point out how the former *is* be accomplished, I must request the reader to *study* carefully the several kinds of aim as illustrated in Plate II., and, whenever opportunity and inclination combine to permit, to make practical test of what he has learnt; and never, whether in his barrack-room at instruction drill, or at divisional field-day, come to the "present" without taking a good and careful aim at some selected object—a good habit will thereby become inculcated, and thorough efficiency will result.

's to  
udy  
in  
on  
e  
f

PLATE. III.



Nº 1 Well defined foresight.

Nº 2 3 4 5 6 Damaged „

„ 7 Correct aim, short distance

„ 8 „ „ { using notch of sliding bar

Nº 9 { Aim at 800 yds using side line, strong wind from the right

„ 10 Correct aim using bar

„ 11 { Aim at 500 yds for man with weak sight

„ 12 { Aim using temporary deflecting sight; wind from left

## CHAPTER V.

### *SIGHTING.*

PROFICIENCY in the art of shooting cannot be attained without a thorough knowledge of the use of the sights—the ability to aim well being of little use unless combined with a clear understanding of the circumstances under which alterations in the elevation of the line of fire become necessary; the quantity of lateral allowance required to counteract the effects of different kinds of wind, and the best method of obtaining such allowance quickly, accurately, and efficiently; also a knowledge of the effects on shooting of different degrees of light, atmosphere, etc.

In sighting, unless thought and judgment are brought to bear on the matter in hand, and carried out by nicety of calculation, and proper manipulation of the backsight, thorough marksmanship cannot result.

“*Elevation.*”—When any change of elevation is found necessary, it must always be obtained by lowering or raising the sliding bar, by means of the forefinger and thumb of the right hand; this must be done with the greatest care, as the difference of one thirty-second of an inch in the height of the

bar will cause a difference of upwards of two feet in the vertical position on the target of the shot, when firing at 600 yards.

Alterations in elevation are constantly being required, even when using the same rifle, and at the same distance, on account of different conditions of weather, etc.; it is also possible that the soldier may be led astray as regards the correct elevation, more especially when using a strange weapon, by its own imperfections, such as a flattened or filed-down foresight (*vide* Fig. 4 and Fig. 6, Plate III.); the distance lines on sliding bar being wrongly placed. Badly preserved or very old ammunition also renders increase of elevation necessary.

Different degrees of light, as caused by the direction and intensity of the sun's rays, have a marked effect upon the eye, and upon the appearance of any object upon which the eye may be fixed, and when taking aim the effect of light upon the appearance of the foresight is especially worthy of note.

It has been recommended, in a previous chapter, to use only the extreme tip of the foresight, or the smallest portion of it that can be distinctly seen over the sliding bar when aiming.

Now, the tip of the foresight, when thus seen by one eye, all the remaining part of it being hidden from view, appears an exceedingly minute object; but with a good light, can be seen sufficiently well *by any one with moderately good eyesight; with a bad light, however, such as after sundown, or when the sun suddenly disappears behind a dark cloud,*

tip of the foresight, which could be seen distinctly before, has now apparently become so diminished in size, under the effects of the change of light, that it cannot be seen at all, and the firer inadvertently raises his foresight above the sliding bar, the tip still preserving the same appearance, owing to the dull light, as it previously did in the strong sun; he is, therefore, unconsciously taking too full a sight, and using too much elevation, which must be counteracted in some way, otherwise he will find himself throwing his bullets over the target.

The bad effects of a change of light, as above explained, should be counteracted by reducing the elevation, or lowering the sliding bar proportionately as the light gets worse. A very slight difference in the light ought to be of no consequence; but when it is found necessary, on account of gradually increasing dullness, or the reverse, to make any alteration, the sliding bar must be moved with the greatest care, and only a hair's breadth at a time.

A sudden change from a very bright to a very dull day will necessitate a reduction of elevation corresponding to about 18 inches on the target, or about what represents 20 yards on the sliding bar (about one-fortieth of an inch).

When firing towards sundown, the sliding bar should be gradually lowered.

If shooting on a hot, dry day, a little more elevation is required than when the atmosphere is moist, as heat tends to cake the fouling, thus causing more friction in the barrel and slightly decreasing the

range. In such weather the breech should always, when not loading, be kept closed, so as to prevent a current of air passing through, there being, as a rule, ample time for the barrel to cool between shots. Should the barrel, however, be very much heated by rapid firing, greater explosive force will be generated; in which case slightly reduced elevation would be required.

"Wind" is the most puzzling thing with which the marksman has to deal, on account of the great variability of its force and direction, and as no fixed rule as to the quantity of elevation, etc., required to counteract its effects, can be made.

According to the quarter from which it blows, wind may necessitate, first, more or less elevation; secondly, alteration in the lateral direction of the aim; and thirdly, both combined.

That wind which has the most power over the bullet, and causes it to deviate most from the true line of fire, is that which blows directly from the right or left, the greatest surface of the bullet being exposed to any side influence.

Wind from the front or rear can only affect the bullet by acting on its point or base, either of which present a comparatively small surface to any opposing force.

The head wind, by offering increased resistance to the passage of the bullet, decreases its velocity, allowing gravity more time to take effect, thus causing it to hit the target lower than it would otherwise do; consequently a proportionate increase

in the elevation is required. Wind from the rear accelerates the speed of the bullet, causing it to strike high; in which case a reduction of elevation becomes necessary.

It has already been said that no fixed rule can well be laid down to meet the ever-varying conditions of wind; but from an experience gained in all kinds of weather, the author is in a position to know that the following table is a pretty correct guide as to the distances it will generally be found necessary to aim off the centre of bull's-eye, in order to counteract the effects of side winds of different forces:—

Distance.	Lateral allowance to right or left required for side winds.		
	Gale, or strong wind.	Moderate wind.	Light wind, or breeze.
500 yards	4 to 6 feet	2 to 4 feet	1 to 2 feet
600 "	4 " 7 "	3 " 5 "	1 " 3 "
700 "	6 " 10 "	4 " 7 "	2 " 4 "
800 "	9 " 13 "	6 " 10 "	3 " 6 "

The soldier cannot impress upon himself too thoroughly the fact that in rifle shooting he will far oftener find himself obliged to aim off the bull's-eye than directly on it, or the centre of any mark at which he may have to fire, especially when practising at the longer distances, or from 600 yards upwards, when the lightest side breeze is sufficient to blow the bullet from two to four feet to one side of the mark.

In the case of wind blowing obliquely across the range, the flight of the bullet is affected in two ways, just as if there were two separate currents, one blowing across the line of fire, and the other from front or rear, as the case might be; so that with a wind blowing from the right or left front, an increase of elevation, as well as an alteration in the direction of the aim, would be necessary; reduced elevation, of course, being required when the wind blows obliquely from the rear. The greatest caution must be used in dealing with these winds, as it is extremely difficult to decide which element is in greatest force, the side current, or that from front or rear.

When the wind is strong, but irregular and gusty (no matter from what quarter it may blow), so much allowance need not be made to counteract its effects as when firing during a steady wind, as the chances are that there will be intermediate lulls; when it is light, but irregular, a little more allowance should be made than for a steady breeze, as sudden gusts may be expected.

When the range, or ground over which the firing takes place, is situated amongst hills, several distinct currents are often prevalent; and in certain cases the firing-point is completely sheltered from the wind, while the course of the bullet is exposed to every wind that blows. In such cases indications must be looked for by which the direction and strength of the wind at the "culminating point" may be ascertained, as it is there (for culminating

point, see Plate I.) that the bullet most feels the effect of the wind.

In regulation ball practice, and on ranges where the surrounding country is not level and the range is not equally exposed throughout, the flag at the firing-point is frequently seen to blow out in one direction, the butt danger flag in another, and the distant danger flag in a direction different from each of the others, plainly showing that different currents of air exist. On such ranges as these, the firer had better be guided by the flag at the butt, unless it happens to be particularly well protected from wind. He should also note such indications along the range as branches waving, detached leaves, grass, etc.

The soldier may have to use his rifle on many occasions where the ground is not level. When firing up an incline, more elevation is required than on level ground, because the upward course of the bullet is then more in opposition to the law of gravity. When the range is downhill, therefore, less elevation is required.

Every rifle is not sighted exactly alike, nor are all sighted correctly—the Martini-Henry being frequently found to be undersighted, in some cases so much so as to necessitate at least 5 per cent. of increase in the elevation used, or, when firing at 800 yards' distance, placing the sliding bar as if for 840 yards.

If the foresight has become blunted or worn down, and its height be thereby lessened (*vide* Fig. 4, Plate III.), its loss of height must be count

balanced by a corresponding reduction in the height of the sliding bar. Although a foresight which has been blunted may be filed up by the armourer until it presents a clear, sharp appearance, its deficiency in height must remain, and can be discovered on comparison with a new or well-preserved rifle.

It is much less difficult to take a correct aim with a well-defined foresight than with one that is rounded off at the top, and the soldier should always be particular to see that such an important part of his weapon is in good order.

A rifle which, on account of long use and having been badly taken care of, has become worn, or enlarged in the bore, is liable to throw the bullet low, as the diameter of the latter is thereby increased, and presents a larger surface to the resistance of the air; its rapidity of rotation is also lessened, and it is more affected by wind.

When the ammunition used is of a very old brand, or has been knocked about for some time, as when used for guards, more elevation ought, as a rule, to be given, as gunpowder deteriorates with time; and careless usage breaks the grains, destroys the glazing, and deprives it of a part of its explosive force.

If the point of the bullet presents a flattened appearance, or has been badly dented, a trifling increase of elevation will probably be required.

rate  
ces-  
oint  
ance  
ling  
ent,  
ver,  
con-  
over,  
ds of  
feet  
ark,  
wind  
tance  
has  
er is  
ark,  
rt to  
o the  
f the  
been  
laid  
what  
2

1  
J  
o  
k  
i  
h  
p  
v  
r  
b  
h  
b  
l  
a  
a  
a  
n  
b  
a  
a  
t  
t  
f  
a  
i  
n

PLA

DEF

## CHAPTER VI

*DEFLECTING-SIGHTS.*

THE principal cause of the difficulty of accurate shooting in windy weather is the absolute necessity of directing the line of fire to some point away from the centre of the mark—the distance of such point from the centre varying according to the strength and direction of the current, and length of range. In doing this, however, the firer loses all the advantage of having a conspicuous central mark to aim at; and as, moreover, it is impossible, at the distance of some hundreds of yards, to determine what point is exactly two feet or four feet or more to the right or left of the mark, the difficulty of accurate shooting in strong wind would be very great were it not for the assistance of deflecting-sights. A simple arrangement has therefore been contrived by which the soldier is enabled to aim straight at the centre of the mark, or the bull's-eye, and at the same time to impart to the line of fire a certain known deviation to the right or left. By this means a great deal of the difficulty of good shooting in strong wind has been overcome; and by studying the rules herein laid down the soldier will learn that, no matter what may be the range, he can aim straight at the

centre of his mark, and at the same time direct the line of fire one, two, or three feet, or, in fact, any distance to the right or left that he considers is required on account of any wind that prevails at the time.

To benefit by the use of the deflecting-sights, the soldier must understand the principles of their application, learn by heart the deflection table, and practice aiming as described herein frequently and carefully.

There will be seen marked on the face of the sliding bar, at the distance of one-eighth of an inch on each side of centre notch, a short vertical line. These lines, or deflecting-sights, are intended to be made use of in aiming (when firing during the existence of a side wind) exactly in the same way as the centre notch or line of sliding bar, the foresight being aligned therewith on the centre of the mark required to be hit. When the wind blows from the right, or the object fired at is moving from left to right, the right side line is to be used, and *vice versâ*.

DEFLECTION TABLE.

Distance.	Deviation given to line of fire when using the side-lines.
400 yards	6 feet 3 inches
500 "	7 " 9 <sup>3</sup> "
600 "	9 " 4 <sup>1</sup> / <sub>2</sub> "
700 "	10 " 11 <sup>1</sup> / <sub>4</sub> "
800 "	12 " 6 "
900 "	14 " 0 <sup>3</sup> / <sub>4</sub> "

This table is based on the principle that in similar triangles similar sides are proportional, and the calculation can be worked out in a few minutes by simple rule of three, calculating the distance between fore and back sights as two feet, and the distance between side and centre lines of sliding bar as one-eighth of an inch.

On referring to Plate IV., the reader will see the theory of the deflecting-sights illustrated. He may further judge for himself of the theoretical correctness of the principle by placing his rifle horizontally on a rest of any kind (a table will do) in his barrack-room, raising the flap of backsight, and aiming through the window or door at any small object outside at about 100 yards' distance, taking his alignment from the small line on the right of the sliding bar, then, without stirring the rifle in any way, move the head a little to the left and align the centre of the notch with the point of the foresight, when it will be found that the new line of sight and line of fire are directed to a point 1 ft.  $6\frac{3}{4}$  in. to the right of the mark.

The deflecting-sights become available only from 400 yards and upwards, being marked on the sliding bar only. The principle, however, can be applied with advantage at the shorter distances. On looking at the foregoing table, it will be seen that when using either of the side lines, a lateral deviation is imparted to the line of fire of 1 ft.  $6\frac{3}{4}$  in. for every 100 yards of distance from the target; so that when firing at a mark, say 500 yards off, a deviation of

7 ft.  $9\frac{1}{4}$  in. would be obtained; therefore, if a strong gale were blowing across the range from the right, of sufficient force to blow the bullet 7 ft.  $9\frac{1}{4}$  in. to the left of the bull's-eye when the centre of the notch is used in aiming, it is plain that by using the right line the bullet would be blown into the centre of the mark—at all events, the firer would have a much better chance of hitting it than if he had to guess at some place which appeared to him to be 7 ft.  $9\frac{1}{4}$  in. to the right, and endeavour to aim at it.

The wind prevailing at the time of firing may not blow with so much force as to necessitate so much deflection as is gained by the use of the side lines already cut on the sliding bar. In such cases, the soldier may be guided by them without making actual use of them in aiming.

It has already been explained that the distance between the centre of notch and side lines is an eighth of an inch, and that the use of the latter in aiming gives lateral deviation of 1 ft.  $6\frac{3}{4}$  in. in each hundred yards; therefore, if the distance between the two lines be equally divided, and another temporary line marked at one-sixteenth of an inch from the centre, just half the deviation, or  $9\frac{3}{8}$  in. per hundred yards, will be given to the line of fire by its use.

Any temporary line, required for deflection, which is marked on the sliding bar by the soldier, should be drawn, vertically, with the point of a hard lead pencil, and will be found distinctly visible when taking aim.

When the soldier becomes experienced in the use

of the sights, and is able to bring judgment to bear efficiently, he may use his discretion as to the exact place where he draws his own deflecting-sight, and as existing circumstances may render desirable.

Another method, but one which should never be adopted by any but the most experienced and intelligent marksman, is to make such mental division of distance between the lines as may be thought necessary at the moment of firing. But to be able to adopt this plan efficiently, the firer must have the table constantly in his mind's eye; he must also possess unfailing judgment and the clearest eyesight.

## CHAPTER VII.

*POSITION.*

THE circumstances under which the soldier may be required to act on the offensive in the field render it necessary that he be drilled to, and exercised in, the use of his rifle in all positions in which his weapon could be used effectively. These circumstances vary according to the nature of the country and operations in which engaged, and are such as to render firing in certain positions sometimes compulsory, while at other times the soldier would be at liberty to choose the position he prefers.

The best shooting position, not only on account of its being the one from which the most accurate firing can be made, but as being that in which the firer is the least exposed to an enemy's view, also requiring less cover than any other, is the front lying-down position. The impossibility, however, of adopting this position on all occasions in war, is so obvious that the importance of the soldier's efficiency as a marksman in the other recognized military positions will be at once acknowledged.

The *standing position* is compulsory when firing at an enemy from behind breastworks and walls, from amongst brushwood or growing corn, when

engaged on boggy or flooded ground, from the inner ranks of a square, through loop-holes, and frequently when skirmishing.

It is certainly more difficult to make accurate shooting in this than in either the kneeling or lying-down positions, owing to the absence of all support to the arms; it is therefore incumbent on the soldier to counteract, by every means in his power, that deficiency—first, by keeping his left arm in good muscular condition; and, secondly, by habituating himself to a good and firm, yet easy and comfortable position: placing his feet firmly on the ground; if the latter be loose or gravelly, sinking the feet into it, but keeping them well separated, with a distance of from 6 to 10 inches between the heels. In the case of very tall men, that distance should be increased an inch or two. The whole body should be inclined slightly forward from the ankles (both legs being kept straight) until the left leg, side, and breast form a perpendicular line; the right toe should point to the right front, and the right shoulder should be brought well round. The butt of rifle should be pressed *firmly* to the shoulder (and not against the muscle of the right arm) with the left hand, which, however, should not grasp it too rigidly, but hold it in front of the barrel stud-pin, and as near the balance as will permit of the elbow being brought *perpendicularly* underneath.

*In taking aim, the head should be lowered straight to the front, until the right cheek rests on the butt.*

As it might often occur on service that a fire would have to be maintained from the standing position, at an enemy a long way off, the greatest pains to become efficient should be taken by all concerned.

*Kneeling.*—Firing from the knee is compulsory in “volley” and “independent firing” from the front ranks of a square, from amongst crops, frequently when skirmishing, and in every case when the enemy could be seen from that position, but not when lying down.

Until the lying-down position was introduced, kneeling was the only position allowed for practice when firing at 400 yards' distance and upwards, and in it admirable firing was made with an inferior weapon to the Martini-Henry; even now, kneeling is the favourite position of some.

In order to make good shooting from the knee, the firer must in the first place feel perfectly at his ease; the muscles of the leg must not feel strained, and care should be taken to see that no irregularities or sharp stones are allowed to remain under the right knee. In getting into position, the right toe should be at least 12 inches in rear of the left heel, right knee and foot being at right angles with left foot, the latter pointing straight to the front; the left leg (from ankle to knee) should be perpendicular; right buttock resting firmly on right heel, body well thrown back, so that very little weight can rest upon the left wrist and ankle, when at the “present.” If any difficulty is experienced in getting the body

firmly seated on the heel, or in elevating the muzzle sufficiently in taking aim, the firer should—if the nature of the ground will allow—work a hole with the right toe, so as to sink the latter into it, or place a small sod, if at hand, underneath the right knee; the difficulty will then be decreased.

In shingly or sandy ground, the stiffest man will find no difficulty whatever in getting into good position.

The muzzle of the rifle should never be raised when aiming in this or any other position by poisoning it between the fingers and thumb of the left hand, as sufficient elevation can always be obtained for the longest distance by sinking the right shoulder and butt, and lowering the head; and when kneeling by drawing the body well back, so as to bring the left forearm into a perpendicular position.

*Lying-down position.*—Efficiency in this, the best of all positions for rifle shooting, is easily acquired by moderate practice, and when firing in this way a most deadly fire can be maintained upon an enemy at any distance up to 1000 yards, by a few good marksmen, the firer at the same time being all but invisible from the front.

In getting into this position, the soldier should not lie down so as to form a straight line with his mark, but obliquely to it. In order to understand what is meant, let him imagine himself standing facing the object at which he is going to fire; let him then make a half-right turn, and then lie down on his belly, still facing half-right, legs and body

forming a straight line, cross the right leg over the left, and raise the rifle to the "present," turning the head and shoulders in the direction of the object, without moving any other part of the body; the stomach should rest flat on the ground, and whilst aiming and firing each shot, the breathing should be suspended. The butt should be placed well in the shoulder, not too low, and in cases where the collar bone is unusually prominent or unprotected, care must be taken to place the butt just underneath it when firing at a very long range, as (when the elevation is great) a jar would otherwise be communicated to the firer, which is rather painful, and has a bad effect on subsequent firing. If the jacket be padded, or a handkerchief introduced underneath it, no inconvenience will be occasioned by the recoil.

In this position the utmost attention must be paid to the uprightness of the sights.

The back position is very seldom made use of in practice, and it cannot be recommended as a military firing position, as in it the soldier finds it nearly impossible to aim, when wearing the valise. It has also other drawbacks, and is generally discouraged.


## CHAPTER VIII.

### *BALL PRACTICE.*

Good shooting on the range depends upon the quality of the drills which have been undergone, and the attention paid thereto, the cleanliness and good condition of the arms, and the intelligence of the men, and their ability to form correct judgment as to what is required in all conditions of weather, etc.; in fact, the ability to shoot well is a test of the worth of the soldier, and the man that cannot shoot at least moderately well is, in these days, of comparatively little use in the field.

Before commencing ball practice, the soldier should carefully examine his rifle, more especially the bore and sights, to see that the former is perfectly free from all dust, rust, and grit; that the foresight is in good condition, and not flattened or dented near the point; and that the notches of backsight are well defined, the lines on the sliding bar being clearly cut and not filled up with dirt. He should also ascertain if the action works freely, and that the "pull-off" is over seven and under eight pounds.

*Just before marching to the range, a rag show*  
E.



be passed down the bore, and the chamber (or place where the cartridge lies when loaded) should be well oiled, to facilitate the removal of the cartridge-case after firing. If the sights have become bright, their brightness should be hidden by holding them over the smoke of a gas jet or candle, or they should be painted with a mixture of lampblack and turpentine.

The ammunition, if issued loose, should also be examined, and if the bullet is much flattened at the point or dented, or is so loose in the case as to be easily moveable backwards or forwards, the soldier should ask to have a perfect cartridge substituted.

On reaching the range, if he does not belong to a squad which has to commence practice at once, he should sit down and learn what he can from what is going forward at the firing-point, satisfying himself about the direction and strength of wind, if any exists, and whether more or less than the average elevation is required on account of the nature of the range, atmosphere, or any other cause.

When his own turn to fire comes, he should ascertain if any alteration has taken place since he made his last observation.

From the moment the soldier steps out to fire until he returns to his place in the ranks, he must allow nothing whatever to attract his attention. After coming to the "ready" position, he should *carefully* adjust the backsight and place himself in good position. He should always decide, before bringing *he rifle to the shoulder*, the exact spot at which he

is going to aim, and after coming to the "present" all he has to do is to carry out with care, coolness, and determination what he has been taught in his preliminary instruction. He must, however, guard against throwing away a shot through nervous impulse; if he finds that, on account of its being the first shot, he is very unsteady, it is better to return to the "ready," rest there a few seconds, and then make another trial.

After having fired, he should remain perfectly steady at the "present," until he hears the bullet strike the target or butt, then return to the "ready" position, order arms, and look out for the marker's signal, carefully noting in his own mind, for future guidance, the position of the hit, and making any necessary alteration in his sight before firing again.

The first shot fired out of a clean rifle will be found generally to strike a little higher than the succeeding shots, when the elevation is the same.

When in the ranks of a squad at practice, the soldier should not gaze too intently upon the target, as such a habit temporarily weakens the sight, and unfits him for taking a clear aim when his own turn comes.

Talking, especially about subjects foreign to the matter in hand, should not be indulged in; but when anything is said by a man in the ranks to a comrade relating to the practice, it should be done in a low tone of voice, so as not to interrupt the firing.

It is an extremely bad practice for two men to fire from the same rifle, and should never be allow

except in cases when a rifle has been so damaged on the ground as to be unfit for use, and there is no spare weapon available. When such a course is unfortunately necessary, the backsight of the rifle must be carefully examined and adjusted by each of the soldiers using it, previous to each shot, as different men frequently use different elevation for the same distance.

The Martini-Henry rifle is found to carry a few inches to the left when firing at the shorter distances, and an allowance of six inches to the right may safely be made on this account when firing at 200 and 300 yards.

In firing alternately, in any position, at the longer ranges, the soldier, in ninety-eight cases out of a hundred prefers lying down.

Firing thus, the file engaged must be careful not to hurry their shooting—a longer aim is required than when firing at short distances, and each man of the file requires a minute or two's rest between each of his shots; number two should, therefore, not commence to load until the result of number one's shot has been signalled and registered. Redoubled attention must now be paid to the uprightness of the sights, and if the weather be unfavourable, the utmost attention must also be paid to the particulars brought under notice in Chapters V. and VI., mental reference being made to the tables at pages 35 and 40.

Occasionally shots are lost to the soldier and his company through carelessness in placing his finger round the trigger before the butt is brought to the

shoulder. A shot thus lost cannot be replaced ; care should therefore be taken to keep the forefinger off the trigger until the rifle is at the "present."

Difficulty is sometimes experienced in removing the empty case after firing. This is either on account of the dirty state of the chamber, or owing to the soldier not knowing how the motion ought to be performed. The chamber should be free from dust, etc., and well oiled. If the cartridge-cases stick, the cartridge should be wetted in the mouth previous to loading, and when the case cannot be withdrawn by the first jerk downwards of the lever, the rifle should not be snapped, as that would have the effect of fixing the case still firmer in the chamber, but the lever should be pressed firmly and strongly downwards, and the case will be found to fly out.

"*Volley Firing.*"—There can be nothing more demoralizing to an enemy than a well-delivered volley. In any other kind of firing men are picked off here and there ; but after a good volley, men and horses go down like corn before a scythe, scattering confusion and dismay amongst the bravest troops.

It ought to be remembered, when practising volleys, that central firing is not an object, and that the shots of a volley, which are equally divided over the surface of the target, would certainly do more execution in an enemy's line, and probably have more effect on a column, than a volley, all the shots of which had struck near the centre.

Had the firing been at an enemy instead of target, a few men near the centre would have been

riddled with bullets, whilst those on and near the flanks would have entirely escaped the effects of such a volley as last named.

An irregularly fired volley cannot be so effective as one which is fired simultaneously, owing to the fact that the later shots of a badly executed volley must necessarily be fired through a cloud of smoke when a correct aim could not be maintained. Every man, therefore, should try to fire at exactly the same instant, each one restraining his inclination to get his shot off until all have had ample time to take a long and deliberate aim.

In volley firing especially, the soldier must be ware of the general tendency to bob forward at the moment of firing. This is often done inadvertently and cannot always be noticed on account of the noise and smoke and amongst the number firing.

In this practice each file should endeavour to hit that part of the target directly in front of it, the centre files only trying to hit the centre of the target.

*“Independent Firing.”*—The young soldier is more liable to unsteadiness in this than in any other branch of his rifle practice, on account of the distraction caused by the continued noise all round him. He is also very liable to fire with too great rapidity, on account of the facility with which he can load.

The bad effects of too great rapidity are felt in various ways, viz., the barrel becomes soon heated and causes increased recoil; the smoke becomes too

thick, rendering correct aim difficult; and a great portion of the ammunition is thrown away. Each soldier should, therefore, husband his ammunition, and endeavour to equalize the fire as much as possible, loading quickly, but resting between each shot, and coming to the "present" when he sees the fire on each side of him slackening.

A little lower aim than usual should be taken in independent firing, as the rifle throws a little high when the barrel is heated.

Should a cartridge-case stick fast, or any accident occur to the rifle of a front-rank man, he should at once pass it to a non-commissioned officer in rear, without attempting to move in any other way.

The remarks under the head of "Volley Firing," regarding the distribution of the fire equally over the whole target, apply equally to this practice.

## CHAPTER IX.

*SKIRMISHING.*

THERE is no test by which the value of the infantry soldier can be so well put to the proof as in his ability to act as a skirmisher; and the infantry man who cannot skirmish well is not fit for active service.

When skirmishing in the field, the skill of each individual as a marksman, his intelligence, appreciation of cover, and knowledge of distance, his activity and powers of endurance, his drill and discipline, are all brought prominently into play.

The skirmishing mode of attack is necessarily carried out over all kinds of country—flat and open, wooded, hilly, covered with a dense growth of vegetation, etc., etc.; and on many occasions, not only whilst skirmishing, but when on outpost duty and scouting, the soldier may find himself so far isolated from his comrades as to be almost entirely dependent upon his own skill and intelligence. If he can realize such a situation, he will at once see the value of being able to act quickly and decide readily what ought to be done under all the circumstances that might arise, and, above all, he must fully understand the meaning of "cover," and also be able to appreciate its value.

Cover is of two kinds: first, that formed by nature, such as undulations and irregularities of the ground, trees, and rocks, also walls, etc., and anything on the spot which can be made available without labour; and, secondly, artificial cover, which has to be thrown up by the troops during their advance. But it is to the former alone that I would direct the soldier's attention at present.

When skirmishing in the open, the slightest undulation or unevenness in the ground affords a certain amount of cover, and a soldier lying behind an elevation in the ground of only about ten inches in height has only the upper part of his head unprotected from the enemy's fire, whilst at the distance of a few hundred yards he could not be seen at all.

A tuft of grass, a clod or two of earth, a few stones heaped together, should always be taken advantage of, because, although not always affording protection from opposing fire, they will serve the purpose of concealment.

The soldier is instructed that when skirmishing he is to take advantage of all cover near at hand; he should, therefore, not be too particular about his "dressing," but when it is his turn to fire, make for the nearest cover, bearing in mind that a very slight rise in the ground a few feet in front of him would cause bullets to ricochet over him, which would otherwise most probably have hit him.

In understanding the value of cover, the soldier will be the better able to judge of those objects which may conceal the enemy, and if he be

superior marksman, and can estimate distance pretty correctly, he might be able, in conjunction with a few others equally skilled, to succeed in dislodging a portion of an unseen enemy that would be perfectly safe against the attempts of a number of unskilful men.

The skirmisher should always be particular to watch the effect of his shots. On sandy or dusty ground a ricochet is generally easily seen, and if the spot be noted by the firer, he will be the better able to make any correction of elevation required for his succeeding shots.\*

When extended, at the halt, but not actually firing, he should always try to improve his position by gathering together any stones, clods, etc., within his reach, or scraping up a small bank if the ground be sandy or loose.

When retiring, he should take notice of any conspicuous landmark, such as a tree or rock, or, in fact, any object which would be recognized from a distance; by counting his paces as he retires, he will always know his distance from the selected object, so that when the enemy comes near it whilst in pursuit, the retiring soldier would know the correct distance at once, and be able to communicate it to his comrades.

Skilful skirmishers must be invaluable to an army; all, therefore, should take a pride in excelling in this most important branch of musketry training.

\* See note \*, page 3.

## CHAPTER X.

### *MATCH FIRING.*

ORGANIZED rifle clubs, and a system of regular annual or half-yearly regimental rifle meetings, are becoming universal throughout the infantry of the army ; and as nothing can tend to improve the soldier's skill in shooting more than a sufficiency of ball practice, so should every encouragement be given by all soldiers to the promotion of regimental schemes of this nature.

The nucleus of a fund for the purchase of ammunition, and to cover the expenses, can always be formed without difficulty in any regiment, by charging an entrance fee of, say one shilling, from members joining, and a subsequent monthly subscription of fourpence or sixpence. This would be found to provide ample funds for all requirements, and also allow of some very handsome prizes being offered for competition.

Shooting matches are of two kinds: first, those in which individual prizes only are competed for, and in which each competitor must do his best to excel all comers in order to become a prize-winner. *secondly, team matches, or those in which a tea-*

or number of men selected from one corps or company is pitted against an equal number from some other corps or company.

In team or company competitions, the greatest harmony should exist amongst all, individual emulation being kept down as much as possible, the best men coaching the others, if desired. It is sometimes hard to overcome the desire to be best man, and in some cases the general success is a matter of secondary consideration. In all team shooting every man should not only shoot his very best, but should also endeavour to assist his comrades to beat him, offering advice when such can be done judiciously, circulating the result of experiences, and so on.

In all match shooting, each competitor should keep some written record of his performances, besides the simple score of points obtained, and this record should invariably afford the following information :—

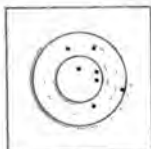
- 1st. Point aimed at, and line on sliding bar used.
- 2nd. Exact position of each hit, and order in which fired.
- 3rd. Direction and nature of wind (if any).
- 4th. Light, whether dull or bright.
- 5th. Elevation used.

Target registers, compiled by different authors for the above purpose, can be obtained from any bookseller, and on the plate facing this page will be seen a simple method of recording the necessary information on similar forms, which will be found at the end of this book,

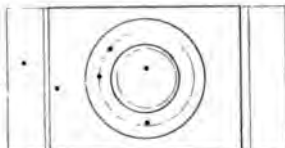


"A"

Date 5 June 18



500 yards



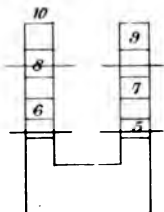
800 yards

The Xs show the allowance required for wind



200 yards

The black lines on the diagrams define the B E. centre & of the regulation targets. The red lines those of the Wimbledon targets, 1877



Score at	1	2	3	4	5	6	7	Total	Wind Strong but regular
200 yards	3	4	5	4	5	2	4	27	Sun. Bright in rear
500 yards	3	5	5	4	5	3	4	29	Atmosphere dry & clear
800 yards	0	2	4	4	3	5	4	22	Foaling hardens quickly
Grand Total —								78	Aimed from centre of bar

At present, it is not generally the practice for soldiers of the regular army to keep any such record, although most volunteers do so habitually, with the best results; and all who aspire to become representatives of their corps in army or other competitions could not do better than follow the example of the riflemen of the auxiliary forces.

All notes recorded during match firing or practice should be entered in a small pocket-book, and indexed, so that reference could at once be made to any particular day's practice.

A spotting-marker and a good glass at the firing-point are invaluable. The person spotting should have before him a cardboard target, about  $1\frac{1}{2}$  ft. square, it should be placed conspicuously on a board, so that the position of the spotting-pin can be distinctly seen from the distance of a few paces. The duty of the spotter is to keep his eye continually on the target (looking through the telescope), and immediately each shot strikes, to place the spotting-pin (a common drawing-pin will answer the purpose) in the cardboard target, so as to denote most exactly the position of the hit. The pin must be left sticking in its place until the result of the succeeding shot is known, when it will be removed and replaced, so as to show the position of the next hit, and so on.

By the foregoing process, each competitor is enabled to learn, immediately after he has fired (irrespective of the signalling, which may be faulty), the exact position of his hit; and, moreover, the necessity of gazing too long at the target is obviated, and the

clearness of his sight is allowed to remain unimpaired.

In all important matches, and preliminary practice connected with them, it is most desirable that each hit should be obliterated as it strikes the target, or at least that the target be cleaned after every ten or twelve hits. The best marker in the world is liable to error, and when there are many hits on a target, too many are prone to signal the value of the hit as soon as known, without being sufficiently careful to show its exact position, and amongst a group the true position of the last hit is frequently most difficult to determine. The disc and brush system of marking should therefore always be adopted where the butts are suitable, and when such is not the case, frequent washing out should be the practice.

In many competitions sighting shots are permitted, in others they are not; but in either case the competitor will derive advantage by firing a "blow-off" shot. This will warm the bore and clear and lubricate the grooves, and the liability of the first shot to carry a little higher than its successors will be reduced. During team competitions, all conversation on the subject of the match should be avoided as far as possible, as tending to increase anxiety as to the result, and to destroy that utter coolness so essential to success.

## CONCLUDING REMARKS.

HAVING, in the foregoing pages, endeavoured to detail as minutely as possible the particulars to be attended to by the soldier during his instruction in the several branches of musketry training, it only remains for me to remind him that every separate item must be well and thoroughly learned and practised, and must be applied collectively when shooting. If care is invariably taken during drill to perform the smallest detail properly, whether under supervision or not, and also to endeavour to learn something from every shot fired, good marksmanship must ensue.

The soldier should recollect that his efficiency in rifle shooting depends so very much upon himself, that without his own hearty co-operation the efforts of his instructors would be nearly useless. He is therefore recommended, no matter in what branch of instruction he may be engaged, never carelessly to slur over the smallest particular; but in cases where he finds any difficulty or awkwardness, to try again and again, until all difficulty has been overcome. By persevering in this course, good position and correctness in aiming, etc., will gradually become a confirmed habit with him, and he will

no more be able to fire a careless shot than he could pass his officer without saluting, or disobey an order when in the ranks on parade.

There is no reason why every man passed into the army should not become at least a fair shot, all being necessarily possessed of full and free use of both eyes and limbs. Confirmed bad shots are therefore generally found to be those individuals who are too thoroughly stupid to understand the simple things they are required to learn; or those who are habitually careless and inattentive during instruction, and who will not impress upon themselves the importance of performing the smallest particular correctly, and with care. The dullest man may, however, be made a fair shot if he will only learn to do as he is told; but the bad soldier, who is so devoid of all pride and ambition as to be habitually careless, inattentive, and undesirous of excelling, is the worst subject with which a musketry instructor can have to deal.

I may here remark that a very great drawback to the good shooting of many a man is to be found in his temper. It is not always easy for a young soldier to grasp at once the meaning of what he may be told, or the words of an instructor may not be so intelligible as they might be. During practice, also, the soldier may be annoyed or discouraged by having made bad shooting, or from some other cause. In every case of the kind, he ought always to endeavour to keep his temper. I have observed numerous instances, where men of an irritable temperament

become flurried on being cautioned or advised, especially during ball practice. As a rule, men who have been attentive during drill do not require to be interfered with during practice; such a course is, however, occasionally necessary. The soldier should, therefore, recollect that caution and advice, when administered by persons capable of doing so to the point, is calculated to improve his skill, and should be attended to and acted upon accordingly.

As the most complete coolness and the absence of all nervous excitement are essential to ensure good rifle shooting, so is all hurry, nervousness, or impatience highly calculated to destroy accuracy of fire.

A determination to excel, whether in an individual or amongst a number of men, has the most wonderful effects. The exertions, good example, and interest taken in shooting by one or two men is infectious; a most marked improvement always succeeds, and the result is increased popularity and increased efficiency, whether in a company only or throughout a regiment. It is often seen that the same company of a regiment remains year after year the best shooting company of the corps, notwithstanding that its opportunities have been no greater than others, and that a lapse of time has caused such changes amongst officers, non-commissioned officers, and men, that the original company remained only in name. This is invariably due to the interest which has been inoculated throughout the company from the old soldiers to the young, and the effects

which are kept up by sheer pluck and determination, seconded by attention to instruction and regular habits.

The young soldier may learn a great deal relating to every part of his duty from his more experienced comrades, and the recruit should never be above consulting with the older soldiers and marksmen belonging to his barrack-room, on everything connected with his shooting. He will thus pick up many useful hints, and will also benefit by the experience and advice of men well skilled in all matters relating to rifle shooting. On the other hand, non-commissioned officers and old soldiers should show to their young comrades that they take an interest in the shooting of their company and corps; they should also take pride in assisting, by precept and example, the more inexperienced or unskilful men, encouraging all who may apply for information.

The object of the musketry training of the soldier being to teach him how to disable his enemy when at a distance which may be unknown, and who may be moving in any direction and at different rates of speed, and who would be, moreover, actively engaged against him, it will be at once seen that to ensure perfect skill in the use of the rifle, the whole of the theory must be most carefully studied, the more especially as there are some things which cannot be practically tested on the rifle range, such as firing at moving objects, etc.

*Let every man, therefore, study the theory of all*

matters connected with rifle shooting. Let him never lose an opportunity to practise, for no man, although he may wear a red coat, can be considered a thoroughly efficient soldier unless he knows how to shoot.











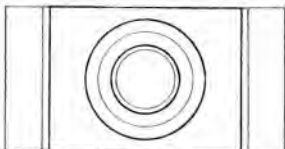




Date \_\_\_\_\_



..... yards

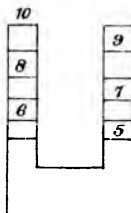


yards



\_\_\_\_\_ yards

The black lines on the diagrams define the B.E. centre & c of the regulation targets. The red lines those of the Wimbledon targets 1877.

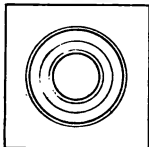


FP

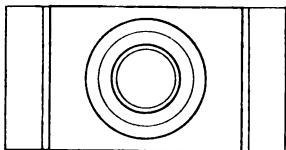
Score at	1	2	3	4	5	6	7		Wind
Yds									Sw
Yds									Atmosphere
Yds									Foaling
Grand Total									Aimed from



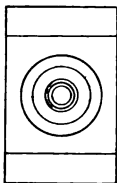
Date \_\_\_\_\_



..... yards

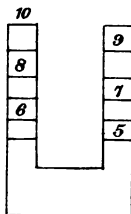


..... yards



..... yards

*The black lines on the diagrams define the B.E. centre &° of the regulation targets. The red lines those of the Wimbledon targets 1877.*



**F P**

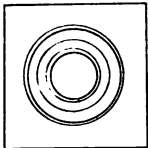
Score at	1	2	3	4	5	6	7		Wind
Yds									Sw
Yds									Atmosphere
Yds									Footing
Grand Total									Aimed from



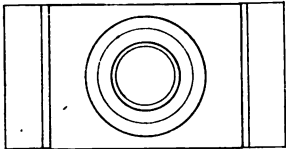




Date \_\_\_\_\_



..... yards

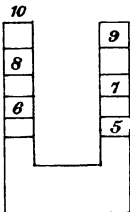


..... yards



..... yards

*The black lines on the diagrams define the B.E. centre &° of the regulation targets. The red lines those of the Wimbledon targets 1877.*



**F P**

Score at	1	2	3	4	5	6	7		Wind .....
Yd <sup>s</sup>									Surv. ....
Yd <sup>s</sup>									Atmosphere .....
Yd <sup>s</sup>									Fouling .....
Grand Total .....									Adjusted from .....



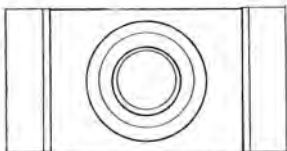




Date \_\_\_\_\_



yards

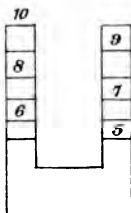


yards



..... yards

The black lines on the diagrams define the B.E. centre & c of the regulation targets. The red lines those of the Wimbledon targets 1877.

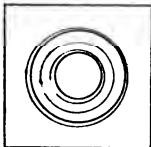


**F P**

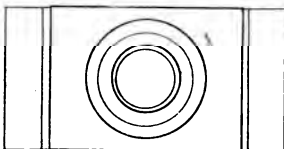
Score at	1	2	3	4	5	6	7		Wind .....
Yds									Star .....
Yds									Atmosphere .....
Yds									Foaling .....
Grand Total —									Aimed from .....



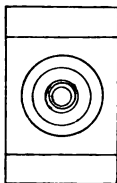
Date \_\_\_\_\_



..... yards

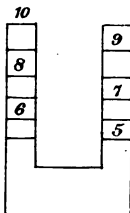


..... yards



..... yards

The black lines on the diagrams define the B.E. centre & c of the regulation targets. The red lines those of the Wimbledon targets 1877.



**F P**

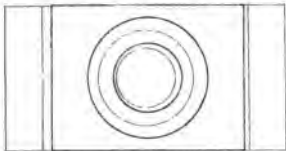
Score at	1	2	3	4	5	6	7		Wind .....
Yds									Sun .....
Yds									Atmosphere .....
Yds									Footing .....
Grand Total _____									Aimed from .....



Date .....



..... yards

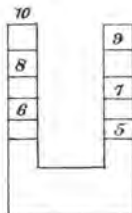


..... yards



..... yards

The black lines on the diagrams define the B.E. centre & c of the regulation targets. The red lines those of the Wimbledon targets 1877.



F P

Score at	1	2	3	4	5	6	7		Wind .....
Yds									Sun. ....
Yds									Atmosphere .....
Yds									Fouling .....

Grand Total .....

Aimed from .....

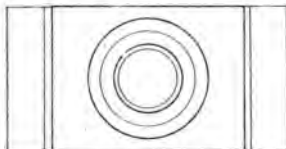


1

\_\_\_\_\_



yards

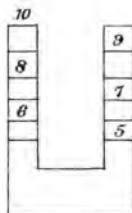


yards



yards

The black lines on the diagrams define the B.E. centre & c of the regulation targets. The red lines those of the Wimbledon targets 1877.



FP

Score at	1	2	3	4	5	6	7		Wind
Vd <sup>s</sup>									Sur
Vd <sup>s</sup>									Atmosphere
Vd <sup>s</sup>									Fouling
Grand Total									Armed from



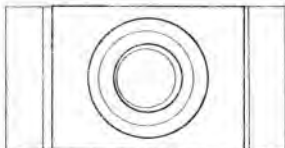
b6

b7C

Date \_\_\_\_\_



yards

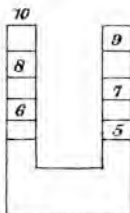


yards



yards

The black lines on the diagrams define the B.E. centre &c of the regulation targets. The red lines those of the Wimbledon targets 1877.



FP

Score at	1	2	3	4	5	6	7		Wind
Vd <sup>s</sup>									Star
Vd <sup>2</sup>									Atmosphere
Vd <sup>s</sup>									Fouling
Grand Total									Aimed from

—

1

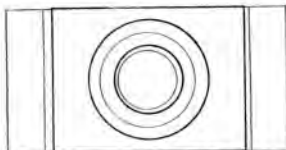




Date \_\_\_\_\_



yards

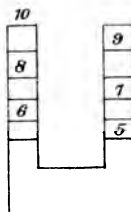


yards



yards

The black lines on the diagrams define the B.E. centre & c of the regulation targets. The red lines those of the Wimbledon targets 1877.

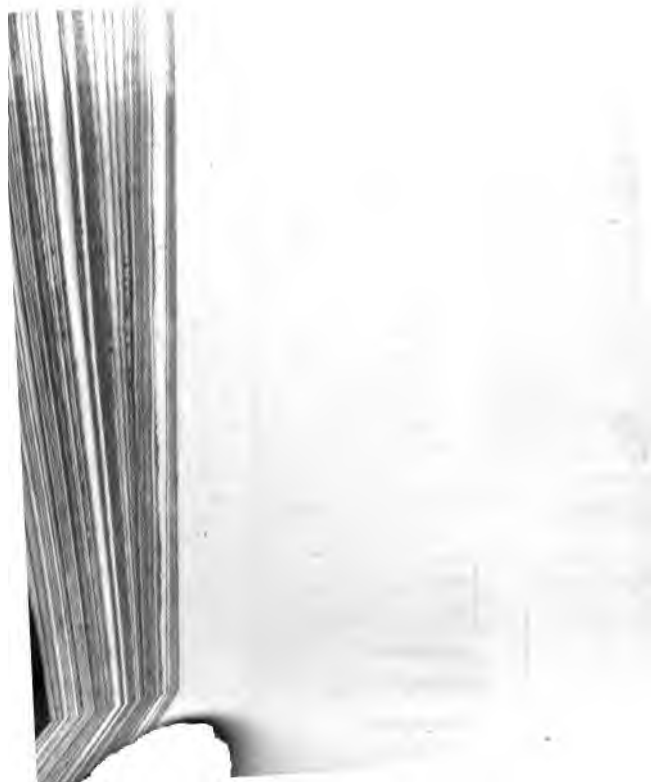
☐

**F P**

Score at	1	2	3	4	5	6	7	Wind
Yds								Sw
Yds								Atmosphere
Yds								Footing
Grand Total								Aimed from







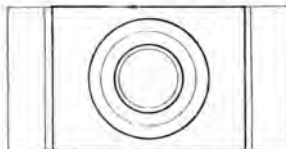




Date \_\_\_\_\_



yards

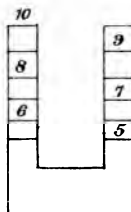


yards



..... yards

*The black lines on the diagrams define the B.E. centre & c of the regulation targets. The red lines those of the Wimbledon targets 1877.*



**F P**

Score at	1	2	3	4	5	6	7		Wind
Yd <sup>8</sup>									Star
Yd <sup>9</sup>									Atmosphere
Yd <sup>10</sup>									Fouling
Grand Total									Aimed from



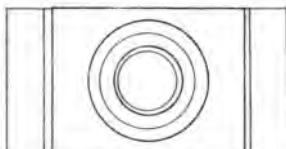
10/10/2010

10/10/2010

\_\_\_\_\_



yards

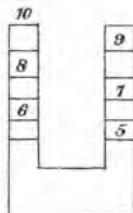


yards



yards

The black lines on the diagrams define the B.E. centre &  $\sigma$  of the regulation targets. The red lines those of the Wimbledon targets 1877.

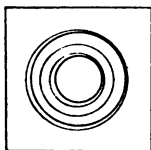


F P

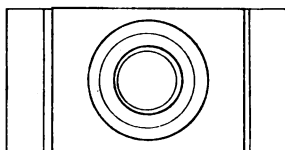
Score at	1	2	3	4	5	6	7		Wind .....
Yds									Surv. ....
Yds									Atmosphere .....
Yds									Foaling .....
Grand Total —									Armed from .....



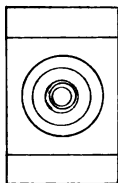
Date.....



..... yards

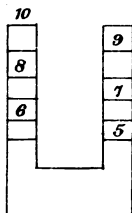


..... yards



..... yards

The black lines on the diagrams define the B.E. centre & c of the regulation targets. The red lines those of the Wimbledon targets 1877.



**F P**

Score at	1	2	3	4	5	6	7	Wind .....
Vd <sup>8</sup>								Surf .....
Vd <sup>2</sup>								Atmosphere .....
Vd <sup>8</sup>								Fouling .....
Grand Total —								Aimed from .....













—

...

...

...

...





